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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/052,166	01/17/2002	Don Warburton	14374.85	3183

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EXAMINER

SONG, HOON K

ART UNIT PAPER NUMBER

2882

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

*AL*

<b>Office Action Summary</b>	Application No. 10/052,166	Applicant(s) WARBURTON, DON	
	Examiner Hoon Song	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 13, 14 and 21-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 13, 14 and 21-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6 and 21-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Chornenky et al. (US 6289079B1).

Regarding claim 1, Chornenky teaches an x-ray tube (figure 1), comprising:

a vacuum enclosure in which is disposed an electron producing cathode (145) and a stationary anode, the stationary anode being positioned to receive at least some of the electrons emitted by the cathode, wherein the stationary anode comprises:

a substrate (115) having first and second ends; and

a target cap (130) having top and side walls that together define a cavity that at least partially receives the first end of the anode substrate and in a manner such that the side walls extend in a direction towards the second end of the anode substrate, and wherein the target cap defines a target surface comprised of an x-ray producing material at a point such that at least some of the electrons emitted by the cathode impinge the target surface to produce primary x-rays having one or more characteristic wavelengths (figure 1).

Regarding claim 2, Chornenky teaches that at least a portion of the target cap comprises a material selected from the group consisting of rhodium, palladium, molybdenum, titanium, and tungsten or alloys thereof (column 11 line 20+).

Regarding claim 3, Chornenky teaches that the cavity is cylindrically shaped (figure 4, the target cap (130) is formed on the cylindrical anode (115)).

Regarding claim 4, Chornenky teaches that the cavity receives the first end of the substrate so as to form a substantially contiguous fit therebetween (figure 1).

Regarding claim 5, Chornenky teaches that the side wall is comprised of a material such that x-rays emitted therefrom have secondary wavelengths that do not interfere with the primary x-rays produced by the target surface (since Chornenky's target cap (top and side) is also composed of a same x-ray producing material, any secondary x-ray created by secondary electron from the side of the target will not interfere a primary x-rays).

Regarding claim 6, Chornenky teaches that the secondary x-rays have characteristic wavelengths that are substantially identical to the characteristic wavelengths of the primary x-rays produced at the target surface (since Chornenky's target cap (top and side) is also composed of a same x-ray producing material, it will generate some of secondary wavelengths of x-rays emitted from the sidewall are substantially identical to the characteristic wavelengths of the primary x-rays).

Regarding claim 21, Chornenky teaches a stationary anode comprising:

a substrate (115) having first and second ends; and

a target cap (130) having top and side walls that together define a cavity that at

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least partially receives the first end of the anode substrate and in a manner such that the side walls extend in a direction towards the second end of the anode substrate, and wherein the target cap defines a target surface comprised of an x-ray producing material at a point such that at least some of the electrons emitted by the cathode impinge the target surface to produce primary x-rays having one or more characteristic wavelengths (column 7 line 50).

Regarding claim 22, Chornenky teaches that at least a portion of the target cap comprises a material selected from the group consisting of: rhodium; palladium; molybdenum; titanium; and, tungsten or alloys thereof (column 11 line 20).

Regarding claim 23, Chornenky teaches that the cavity is substantially cylindrically shaped (figure 4, the target cap (130) is formed on the cylindrical anode (115)).

Regarding claim 24, Chornenky teaches that the cavity receives the first end of the substrate so as to form a substantially contiguous fit therebetween (figure 1).

Regarding claim 25, Chornenky teaches that the side wall is comprised of a material such that x-rays emitted therefrom have secondary wavelengths that do not interfere with the primary x-rays produced by the target surface (since Chornenky's target cap (top and side) is also composed of a same x-ray producing material, any secondary x-ray created by secondary electron from the side of the target will not interfere a primary x-rays).

Regarding claim 26, Chornenky teaches that at least some of the

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secondary wavelengths of the x-rays emitted from the sidewall are substantially identical to the characteristic wavelengths of the primary x-rays produced at the target surface (since Chornenky's target cap (top and side) is also composed of a same x-ray producing material, it will generate some of secondary wavelengths of x-rays emitted from the sidewall are substantially identical to the characteristic wavelengths of the primary x-rays).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 7-9, 13-14 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chornenky in view of Kuroda et al. (US 5768338).

Regarding claims 7-8 and 27, Chornenky teaches a target cap configured for attachment to a stationary anode substrate, the stationary anode substrate being disposed within a vacuum enclosure in an x-ray tube, wherein the target cap comprises:

A top wall defining a target surface and a continuous side wall, wherein the walls cooperate to define a cavity into which a portion of the stationary anode substrate is received, and wherein the top wall is comprised of a material that produces primary x-rays when impinged by electron, at least some of the primary x-rays having one or more characteristic wavelengths, wherein the side wall is comprised of a material such that the side wall produces secondary x-rays when impinged by electrons, the secondary x-

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rays having wavelengths that do not interfere with the primary x-rays (since Chornenky's target cap (top and side) is also composed of a same x-ray producing material, any secondary x-ray created by secondary electron from the side of the target will not interfere a primary x-rays).

However Chornenky fails to teach that the top wall is planar.

Kuroda teaches an anode target having a planar surface.

It would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to provide the x-ray target cap of Chornenky with the planar target surface as taught by Kuroda since the planar target surface of Kuroda would allow one to direct a substantial portion of generated x-rays to predetermined direction.

Regarding claim 9, Chornenky teaches that at least some of the secondary x-rays produced by the side wall have one or more characteristic wavelengths that are substantially identical to the one or more characteristic wavelengths of at least some of the primary x-rays (since target cap material is same for top and sides, it will generate some of secondary wavelengths of x-rays emitted from the sidewall are substantially identical to the characteristic wavelengths of the primary x-rays) .

Regarding claim 13, Chornenky teaches that the target cap comprises a material selected from the group consisting of rhodium, palladium, molybdenum, titanium, and tungsten and alloys thereof (column 11 line 20).

Regarding claim 14, Chornenky teaches that the cavity is cylindrically shaped (figure 1).

### ***Response to Arguments***

Regarding independent claim 1, the examiner indicated the substrate to be numeral "155" on previous office action. The substrate is now indicated to be numeral "115" on figure 1 of Chornenky reference.

Regarding claim 1-6 and 18-20, Applicant argues that Chornenky fails to teach a "stationary anode comprising a substrate..." because a central core conductor (155) is separate and discrete from an anode (115).

The examiner respectfully disagrees with that because Chornenky teaches a target cap (130) which is formed on diamond anode (115) thus, the diamond anode (115) can be constituted as a substrate.

Accordingly, Chornenky teaches a stationary anode comprising a substrate (115) having first and second ends and a target cap (130) having top and side walls that together define a cavity..."

In view of the foregoing discussion, the examiner respectfully submits that Chornenky teaches each and every element as set forth in claim 1 and accordingly, Chornenky anticipates claim 1.

Applicant's arguments with respect to claims 7-9 and 13-14 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoon Song whose telephone number is 703-308-2736. The examiner can normally be reached on 8:30 AM - 5 PM, Monday - Friday.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 703-308-4858. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Hoon Song

HKS/ 1/11/04

  
EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER